The Future Zero Trust in the Cloud

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Cloud and mobility: enablers, but disrupt networking and security

Old World

New World

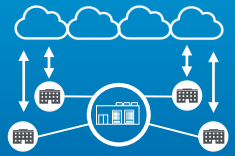
It started with cloud app adoption…

DC

Cloud + DC

And that drives Network Transformation…

Hub-and-Spoke to DC



Direct-to-Cloud

Which disrupts network security

Network Security

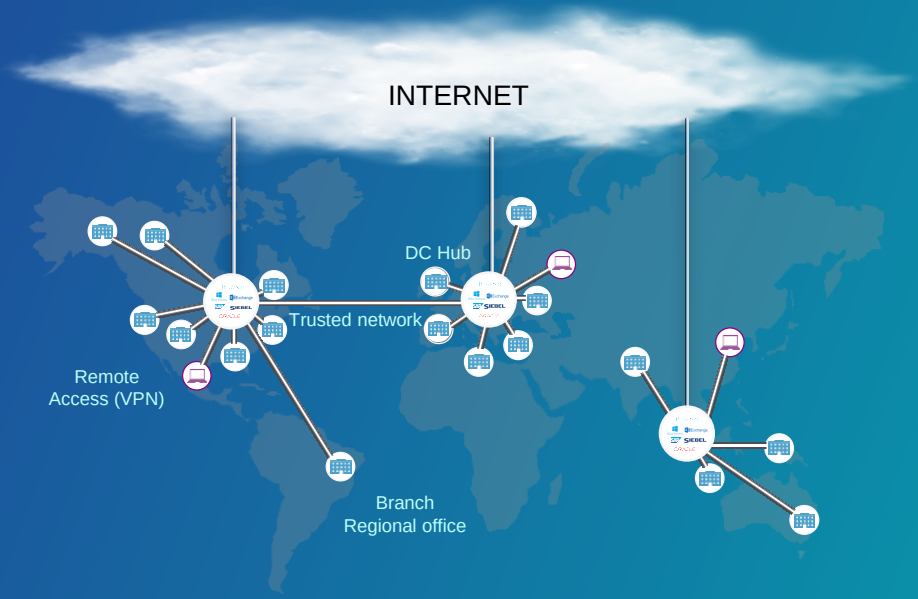
?

Legacy Datacenter

The **data center** was the **center of gravity**

Legacy Network

Internal networks were built and optimized to connect users to apps in the datacenter



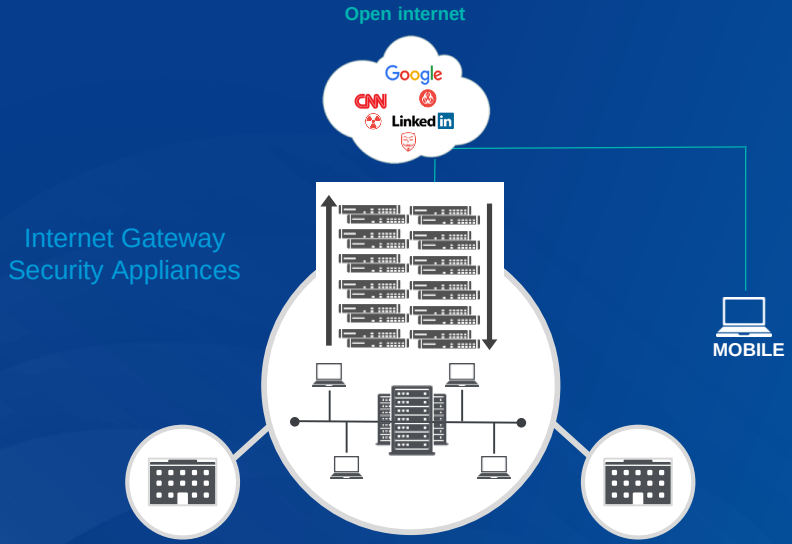
MPLS connects 100's of offices worldwide

3 – 6 DCs with a few internet gateways

VPN to connects mobile workforce (50%)

Instead: decouple app access from network access

Network – Centric



Secure the corporate network to protect users and data

Build a security moat of appliances to protect the network

User – Centric

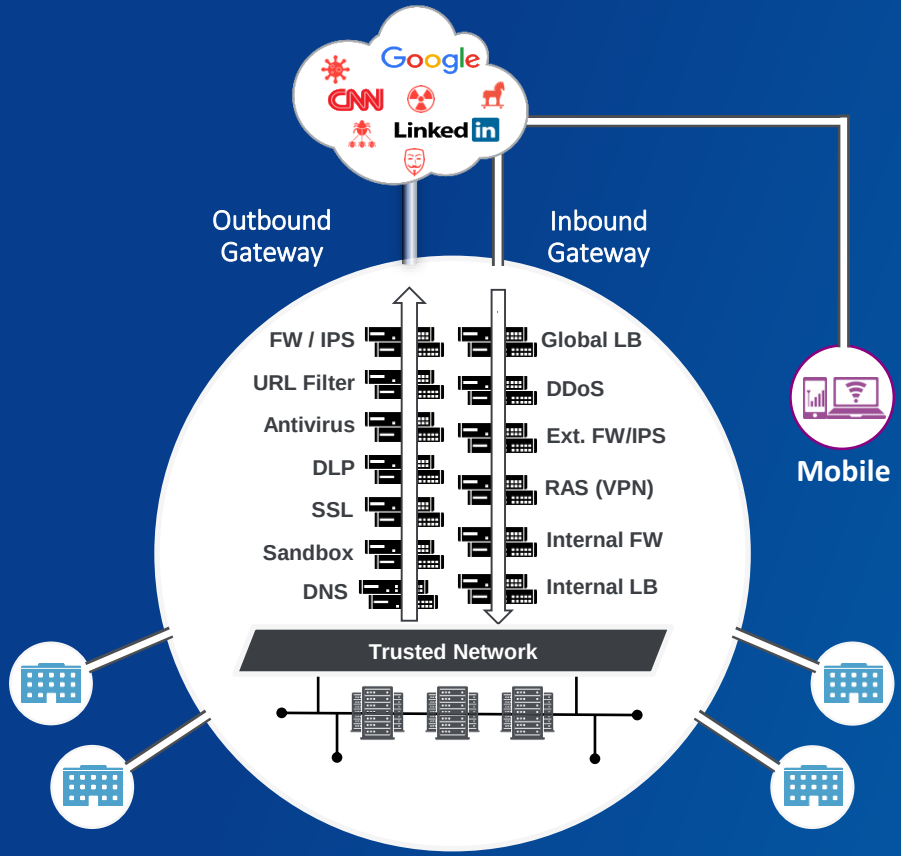
Securely connect users to apps or services

Decouple network access from application access

Current State of Network

How things are

Legacy Federal castle and moat network security



Network security = secure the network to protect users and apps

Perimeter (moat) of appliances to protect the network

And serve as gateways (drawbridges) to go in and out

You controlled: network, apps/data, users

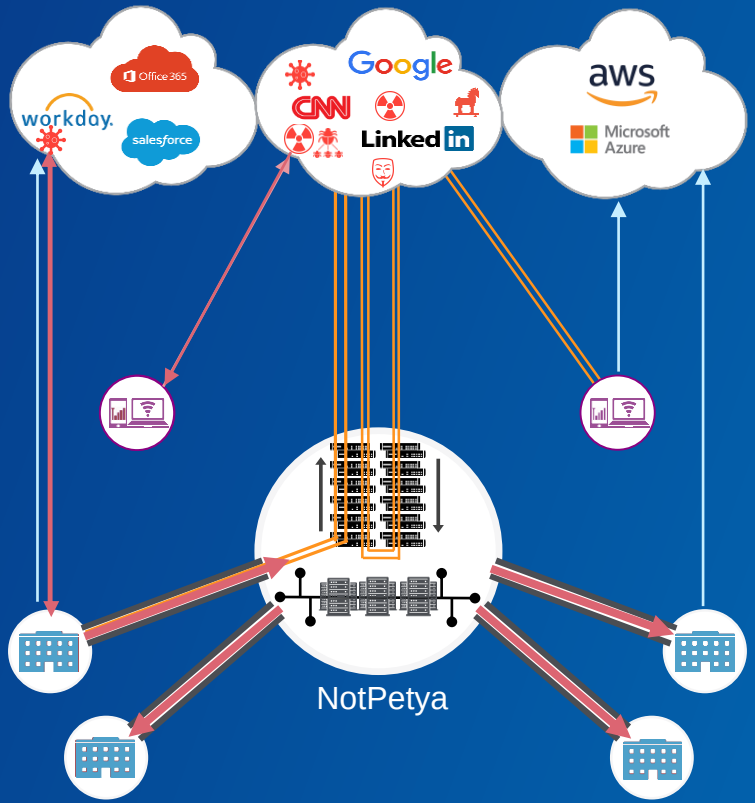
Cloud breaks Federal legacy networks and security

The cloud is the new data center

Backhaul Traffic
Branch: MPLS / Mobile: VPN

Natural path
Direct-to-Cloud

But, security is still sitting in the DC



Poor user experience

MPLS backhaul costs

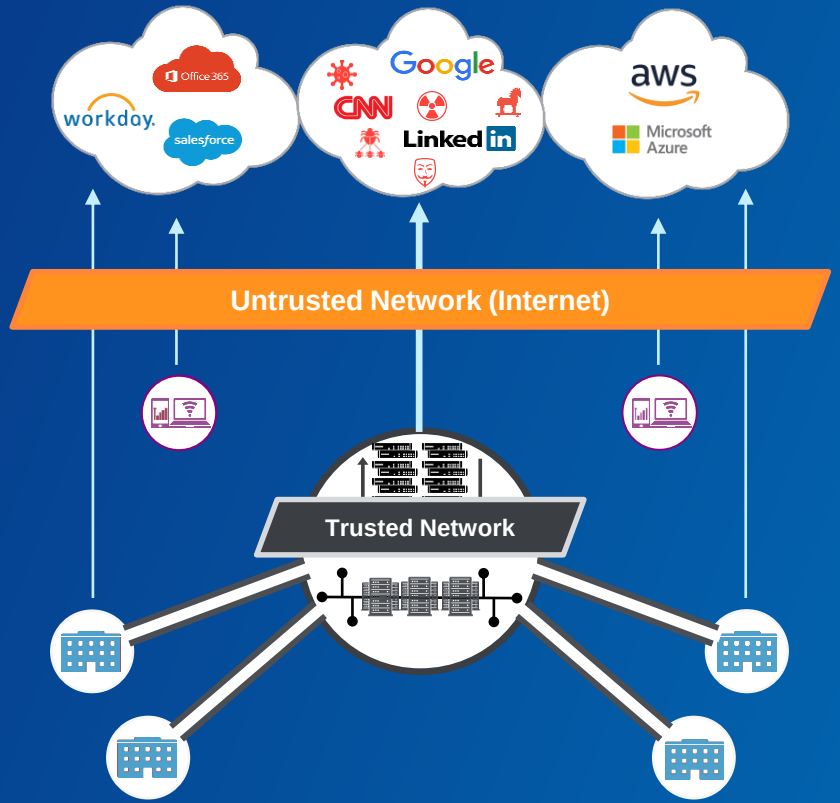
Security risk

Can you do network security in the world of cloud?

How do you secure a network you don't control?

Can't build a 'moat' around it with firewalls and proxies

How do you protect your users and apps?



A new approach to security is needed

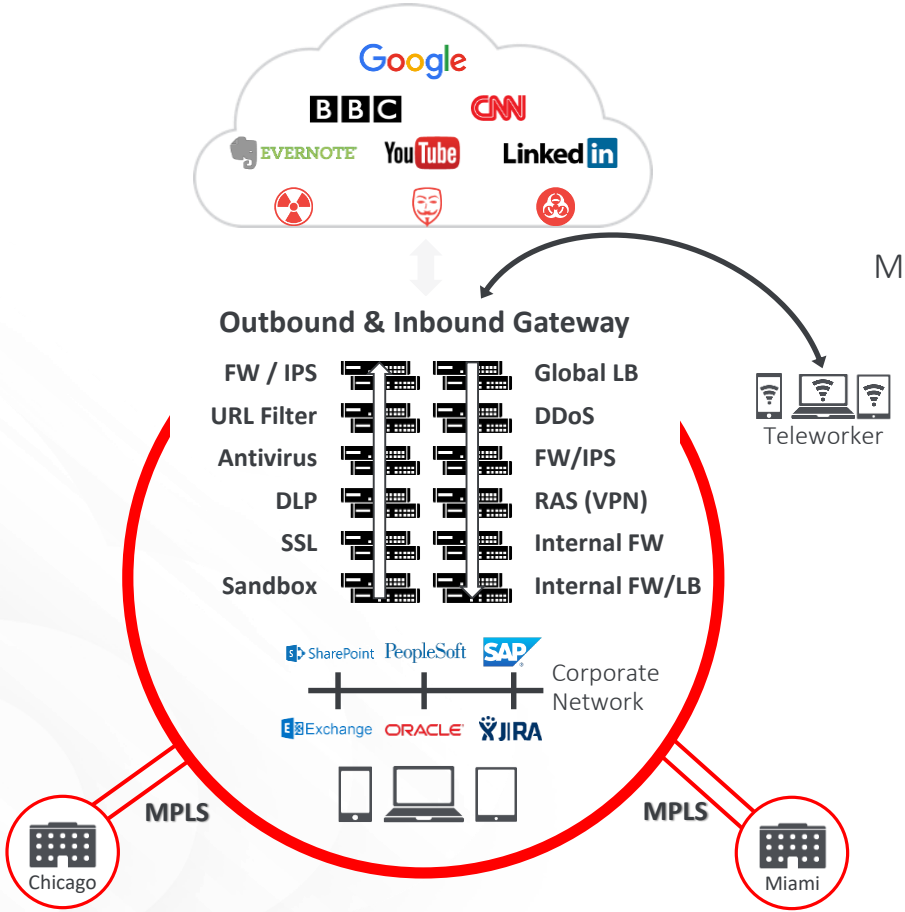
Agnostic
Cloud
Network
Device

Current IT: Typical Federal network (static perimeter)

Castle and moat: Secure the network to secure servers, apps, and users

Outbound gateways
Secure access to Internet
More threats, more appliances

Inbound gateways
VPN to access DC apps
More users, more appliances



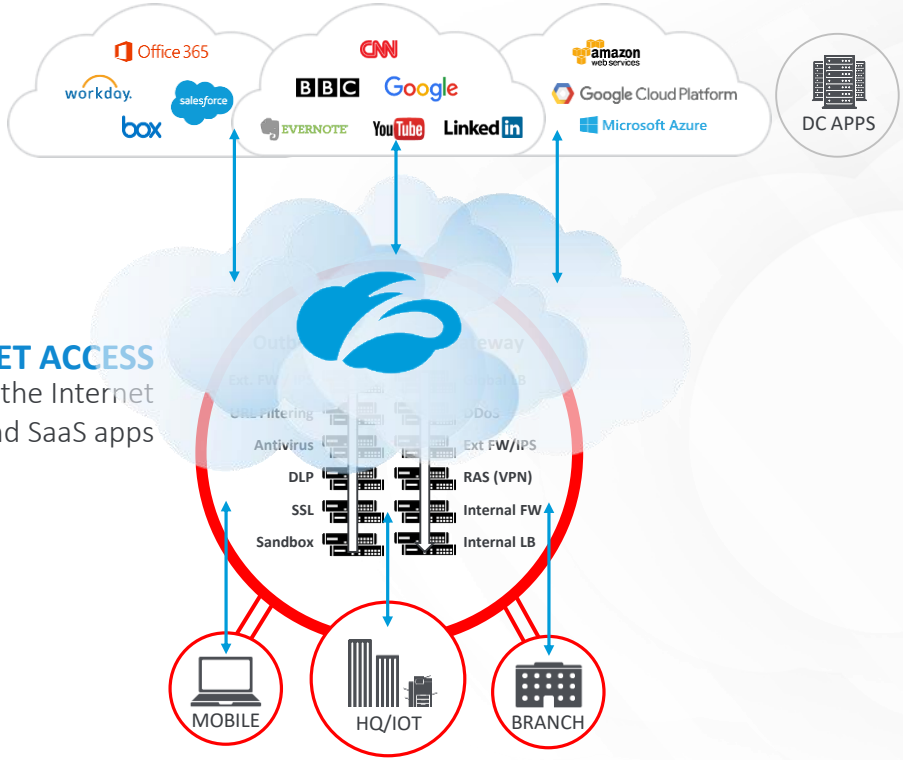
Challenges – '90s Design

- Expensive to deploy
- Castle and Moat
- Complex to manage
- Remote Users
- BYOD
- Shadow IT
- Manual cloud migration
- Security compromises
- Poor user experience

Internet: The Next Generation Network

Transform to a new approach to Network Access and Security

Fast, secure, policy-based access connecting the right user to the right service and app



INTERNET ACCESS

Secure access to the Internet and SaaS apps

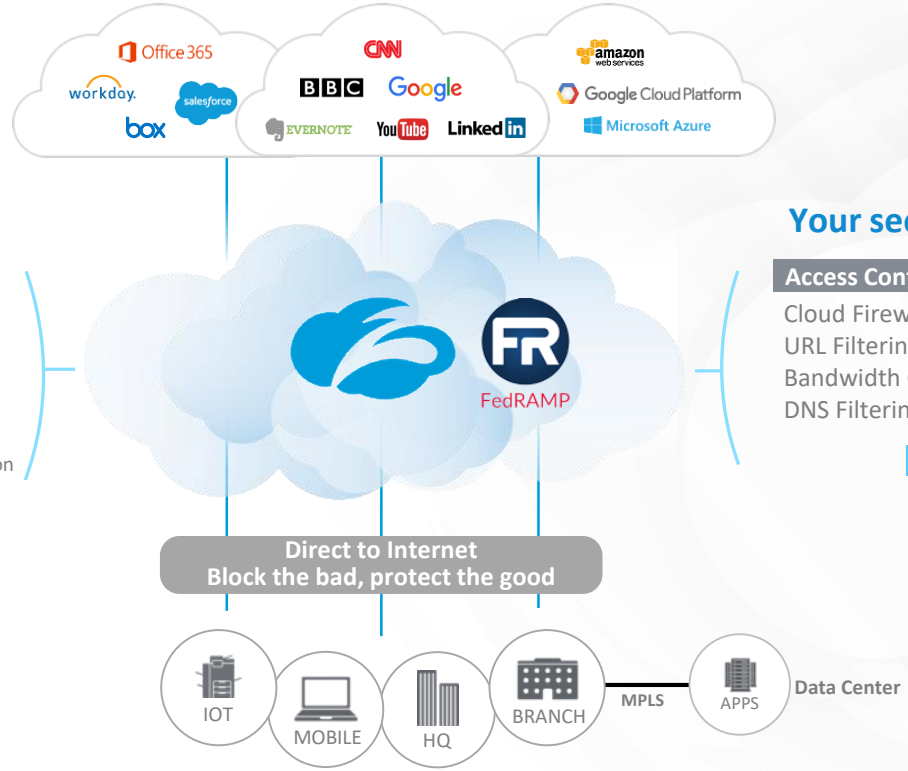
Securing the network is no longer relevant

Cloud Internet Access – Fast, secure access to the Internet and SaaS

Real-time policy and analytics

Real-time policy engine
Polices follow the user
Changes are immediately enforced, worldwide

Business analytics
Global visibility into apps and threats blocked
Identify botnet infected machines for remediation



Your security stack as a service

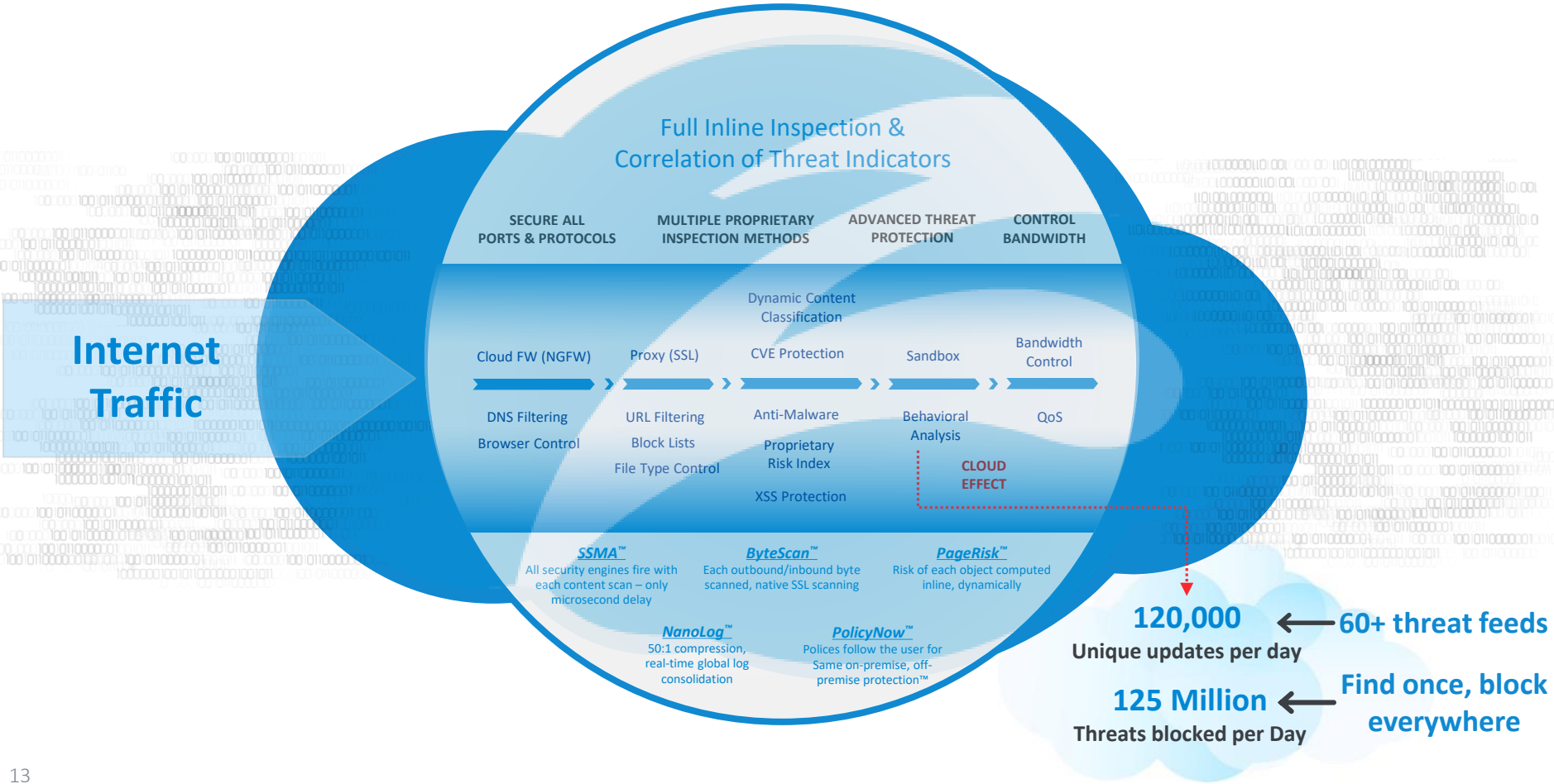
Access Control
- Cloud Firewall
- URL Filtering
- Bandwidth Control
- DNS Filtering

Threat Prevention
- Adv. Protection
- Cloud Sandbox
- Anti-Virus
- DNS Security

Data Protection
- Data Loss Prevention
- Cloud Apps (CASB)
- File Type Controls

The best approach for **SD-WAN** and **Office 365**

Cutting edge security capabilities in the cloud – No service Chaining



Internet: The Next Generation Network

Securing private applications with Zero Trust

VPN over **TIC / JRSS** causes latency

Network-centric methods are no longer effective

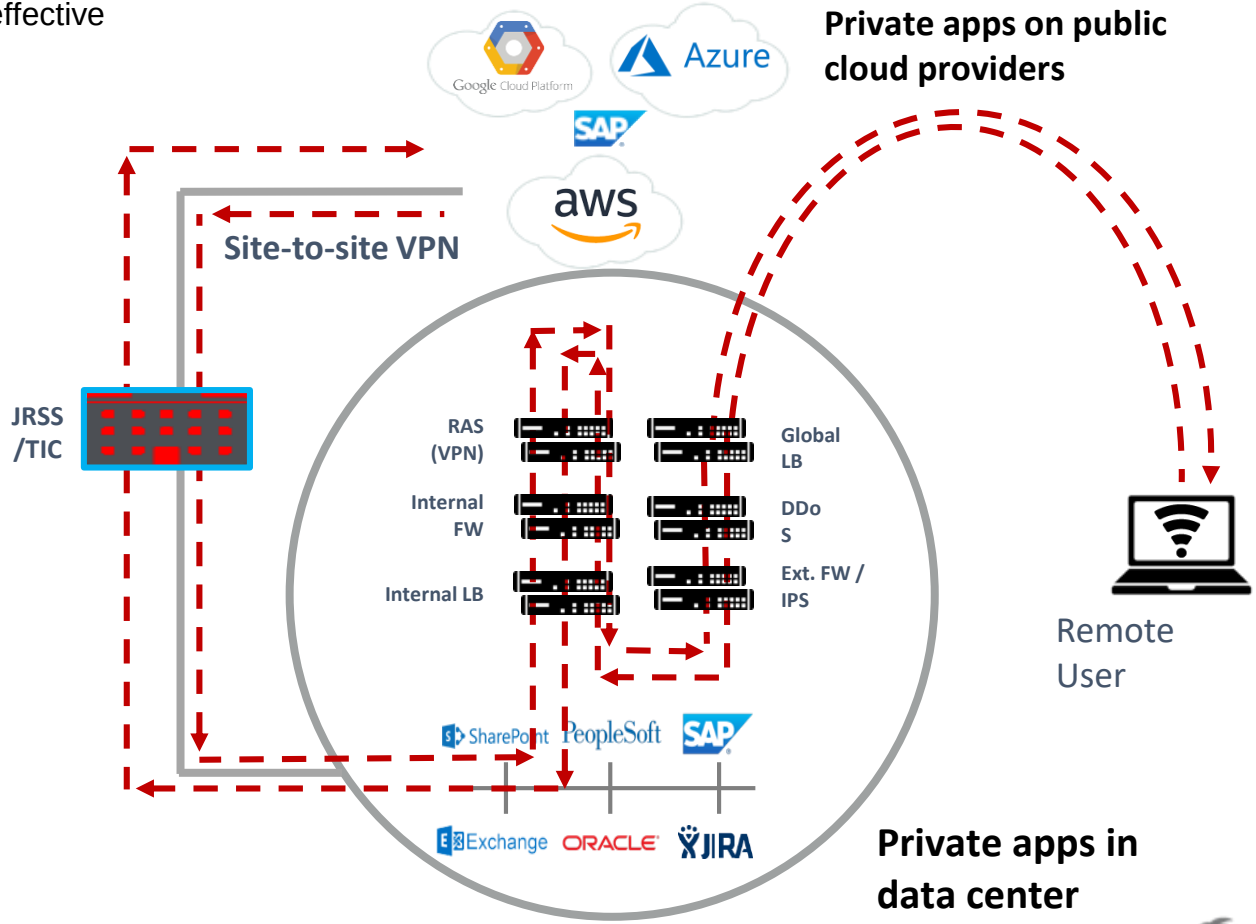
TIC / JRSS cause latency for all your users, and creates more issues than it solves

Risk is introduced by giving too much trust to users and networks

Complexity of ACLs and firewalls can make remote access difficult to manage

Users become frustrated with a poor experience

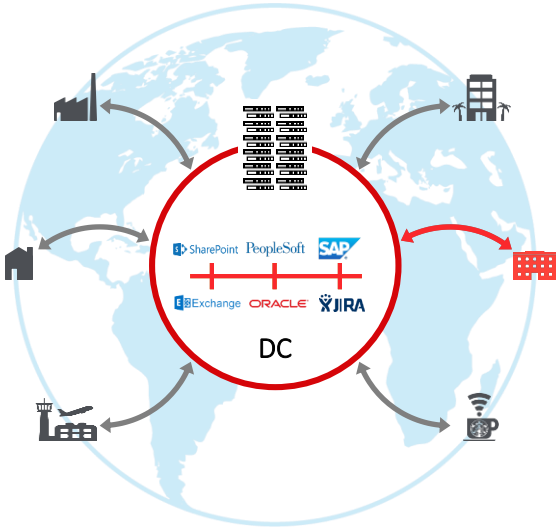
Months often spent on getting infrastructure set up



Security problems with VPN technology

Broader attack surface = Higher risk

- App access requires a user to be on the network; corporate network extends to every location of a VPN user. This broadens the attack surface, exposing apps to attacks.
- Once on your network, a user can laterally scan other resources and exploit their vulnerabilities.



Over-exposed = Vulnerable

- VPNs are exposed to the Internet – a DDoS target, potential service disruption.
- Attackers will target any exposed surface, discover vulnerabilities, and attack them.

> Attackers who discover services often find vulnerabilities in applications and in (APIs) that bypass firewalls and intrusion prevention systems (IPS). Attackers will target services, users of the services, or both. Gartner

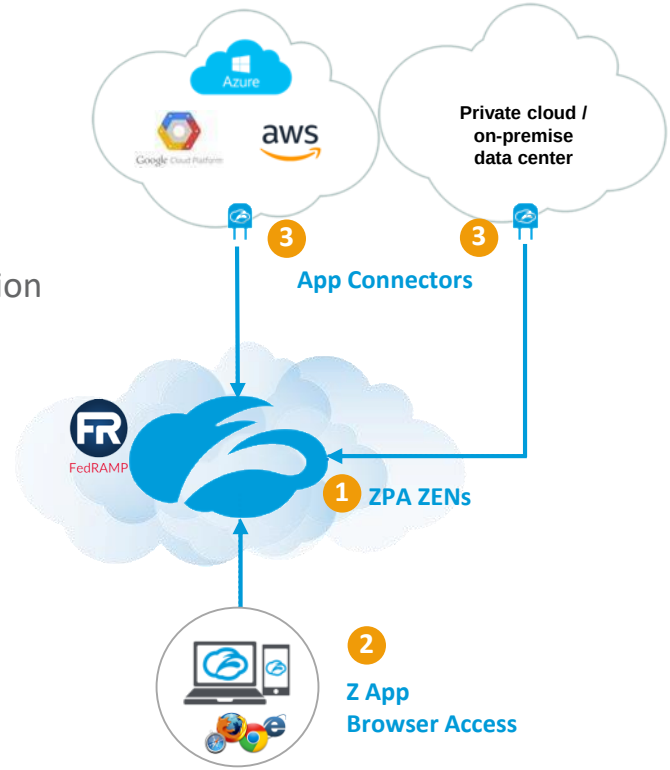
Fast, secure, zero trust access to internal apps

Zero trust security architecture

1 **Brokers**
secure user to app connection

2 **App / Browser Access**
request access to app

3 **App Connectors**
sit in front of apps –
outbound-only connection



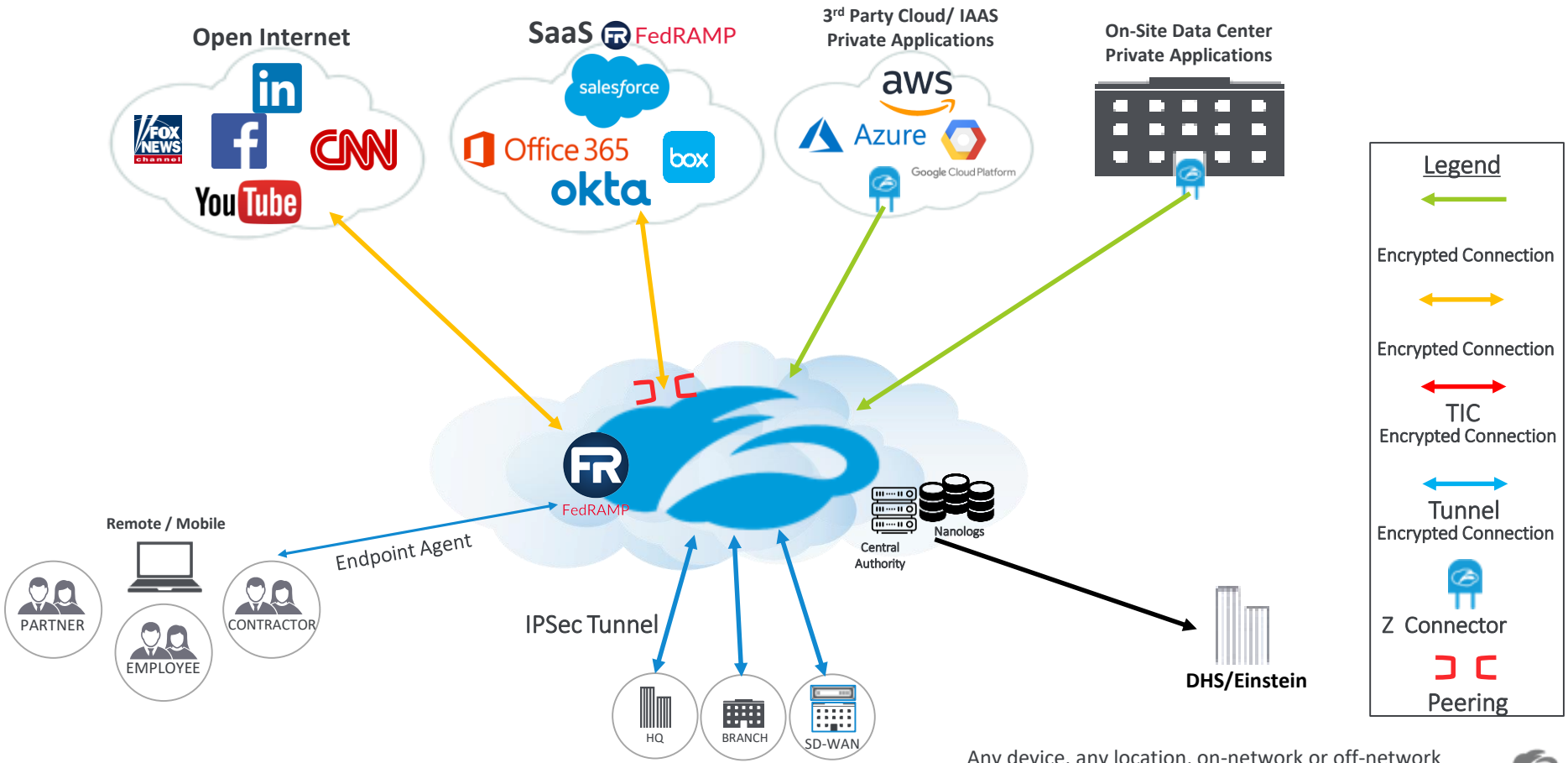
Zero trust access

- Treat all as untrusted –
both outside & inside the perimeter
- Verification prior to granting access
- Access is granted on a strict
“need to know” basis
- App access without requiring
network access
- Segment of one is created between
named users & named application

Current State of Network

How things are

Bypass the TIC/JRSS thru secure **policy-based** access to applications, Internet and SaaS services over encrypted connections



Any device, any location, on-network or off-network

The 4 tenets that set ZTM apart

1. Proven Zero Trust Model - Users are never placed on-net
2. Dark Network- “Inside-out” connectivity - apps invisible to unauthorized users
3. No inbound connections and no inside listeners allowed
4. Application segmentation, not network segmentation
5. Bypass MTIPS/TIC/JRSS - The Internet is the new secure network

ZPA vis-à-vis NIST 800-207 draft Zero Trust Architecture

- Fulfills the ZTA tenets defined in section 2.1; adheres to assumptions in section 2.2
- Section 2.3 core components (PE, PA, PEP) reside in Zscaler cloud
  - Integrates with existing data sources (direct: IdP, SIEM, PKI; indirect: CDM, compliance, threat intel)
- ZPA maps to multiple Section 3.1 deployment models
  - With Z App - Device Agent/Gateway-Based (3.1.1) & Micro-Perimeter-Based (3.1.2) models
  - With Browser access - Resource Portal-Based model (3.1.3)
- Utilizes singular, criteria-based trust algorithms (section 3.2.1); independent control plane / data plane (section 3.3)
- Applicable to all section 4 use cases - satellite, multi-cloud, contractor, collaboration
- Contributes to mitigation of threats described in section 5
  - Hardened against subversion (5.1), DoS (5.2); stored metadata & policies are protected (5.5)
  - Provides tools to help address insider thread (5.3), network visibility (5.4)

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Zero Trust – discoveries & challenges

- Existing networks / access solutions were not designed with Zero Trust in mind
  - Apps, app users, network paths to apps may be undocumented or even unknown
  - Start in discovery mode / more open connectivity, then lock down as you understand more
- Organizations need visibility first into what apps they have, then into who is using what
  - No easy button – best approach is a phased deployment
  - Start with well-characterized use cases while gathering data for more complex scenarios
- Many typical network / security project challenges still apply
  - Agent deployment, IAM integration / maturity, resource classification
- Accountability can be an impediment to implementing a Zero Trust solution
  - Multiple stakeholders with different agendas, responsibilities, visions
- Need to build a comfort level with a new model of access enablement
  - Look forward, not back – build today for tomorrow, not with tools of the past

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Recommended Resources

- ACT-IAC
  - Zero Trust whitepaper - https://www.actiac.org/zero-trust-cybersecurity-current-trends
  - Panel discussion - https://www.youtube.com/watch?v=LJip0JsRps0
- Zscaler for government - https://www.zscaler.com/solutions/government
- Zscaler Private Access - https://www.zscaler.com/zpa
  - VPN vs ZPA - https://www.youtube.com/watch?v=EanV0tE9goU
- Zscaler on Zero Trust:
  - Zero Trust and Beyond (webinar)
    - https://community.zscaler.com/t/zero-trust-and-beyond/4302
  - SDP, ZTNA, and CARTA (blog)
    - https://www.zscaler.com/blogs/corporate/sdp-ztna-and-carta
  - Zero Trust 10 Years Later (blog)
    - https://www.zscaler.com/blogs/corporate/zero-trust-ten-years-later-it-time-think-bigger